

GLOBAL 2007:

Advanced Fuel Cycles and Systems

Preliminary Program (Draft)

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Boise, Idaho

SEPTEMBER 9 - 13, 2007

Click on a topic to jump to that part in the program.

MONDAY, SEPTEMBER 10

8:00 a.m. Opening Plenary

1:30 p.m. Technical Sessions

- Fuel Performance Analysis I
- Sodium-Cooled Reactors I
- Aqueous Based Partitioning
- Repository Analyses and Optimization
- Fuel Cycle Modeling & Materials Control and Accountability
- Recycling Operations and Operational Experience
- Foundations for PRPP Methodology Panel
- Panel on Public Policy
- Process Technology Aspects of Integrated Fuel Cycle Concepts
- Globalization and Sustainability of Nuclear Energy
- Safeguards Technology in an Advanced Fuel Cycle Facility

TUESDAY, SEPTEMBER 11

8:00 a.m. Plenary Session II: International Programs and Status

1:30 p.m. Technical Sessions

- Fuel Modeling
- History and Operation of EBR-II Panel
- Partitioning and Transmutation Strategies
- Repository Analyses & Optimization II
- Advances in Treating Nuclear Wastes: Decontamination, Destruction of Organics and Steam Reforming
- Advanced Recycling Technology
- PR&PP Methodology: Applications Panel
- General Panel III

5:00 p.m. Special Committee for Nuclear Nonproliferation Panel

WEDNESDAY, SEPTEMBER 12

8:00 a.m. Technical Sessions

- Non-Oxide Fuel Fabrication
- Technologies and Advances in Off-gas Treatment
- Reactor Transmutation

Repository Testing and Materials Analyses

Actinide Extraction

Pyrochemistry I

PR&PP and Other Methodologies and Applications Panel

Session

GNEP and Reactors for International Deployment Panel

Systems Analysis or Strategic Implications of Integrated Fuel Cycle Concepts

Nuclear Production of Hydrogen I

High Temperature Reactors

1:00 p.m. Technical Sessions

- Oxide Fuel Fabrication
- Advanced Water Cooled Reactors I
- Accelerator Driven Transmutation
- Development of HLW Forms
- Demonstrations and Engineering for Advanced Separations Technology
- Pyroprocessing II
- New Extractants and Diluents
- International Cooperation on Nuclear Energy
- Reactor Aspects of the Integrated Fuel Cycle
- Sodium Cooled Reactors II: Reactor Technology
- International Programs and Frameworks

THURSDAY, SEPTEMBER 13

8:00 a.m. Technical Sessions

- Fuel Performance Analysis II
- Fuel Properties
- Molten Salt Based Waste Treatment and Waste Form Development
- Performance Assessment and Data Parameters
- Head End Processing
- Unique Extractions and Processes
- Sustainability and Utilization of Nuclear Technology
- Advanced Nuclear Fuel Cycle Concepts
- Nuclear Production of Hydrogen II
- New Technologies in Detecting Proliferation

1:00 p.m. Technical Sessions

- Overviews of International Fuels Programs
- Advanced Water Cooled Reactors II

Lead-Cooled Reactor Systems
Nuclear Nonproliferation Systems and Facility Modeling
Development of Separation & Monitoring Strategies for Aqueous Reprocessing
Partitioning Process Development
Optimizing Solution Chemistry – Radiolysis, Polymerization and Hydrolysis

3:45 p.m. Plenary Session III - Closing

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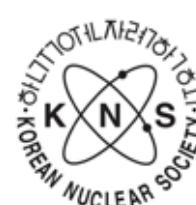
American Nuclear Society



Atomic Energy Society of Japan



Canadian Nuclear Society



Korean Nuclear Society



Societe Francaise d'Energie Nucleaire

MONDAY, SEPTEMBER 10 – 8:30 A.M.**Opening Plenary****Room: Golden Eagle****Plenary Session II****Session Title: International Programs and Status****Room: Falcon****MONDAY, SEPTEMBER 10 – 1:30 P.M.****Advanced Fuels and Material Session 4.4****Session Title: Fuel Performance Analysis I****Room: Willows**

Initial Irradiation of the First Advanced Gas Reactor Fuel Development and Qualification Experiment • S. Blaine Grover (*INL*)

Advanced TRISO Fuels with Zirconium Carbide for High Temperature Reactors • Sergiy Lobach (*Univ. of South Carolina*), Travis Warren Knight (*Univ. of South Carolina*), Norman P. Jacob (*NFS*), Clifton E. Athon (*NFS*)

Progress on inert matrix fuels for Minor Actinide transmutation in fast reactor • Dominique M. Warin (*CEA*)

Concepts for Transient Testing of Transuranic Fuels • Steven Wright (*SNL*)

On-line nondestructive methods for examining fuel particles • Allan Pardini, PNNL • Leonard Bond (*PNNL*), Morris Good (*PNNL*), Salahuddin Ahmed (*PNNL*), Ronald Hokey (*Applied Research Assoc.*), John Saurwein (*General Atomics*), Joseph Nhum Gray (*Iowa State Univ.*)

Progress in the R&D Project on Oxide Dispersion Strengthened and Precipitation Hardened Ferritic Steels for Sodium Cooled Fast Breeder Reactor Fuels • Takeji Kaito (*JAEA*), Satoshi Ohtsuka (*JAEA*), Masaki Inoue (*JAEA*)

Innovative Non Destructive Evaluation Methods on HTR Fuel at AREVA: Towards a 100% Non Invasive Control Strategy • J. Banchet (*AREVA*), S. Lara (*AREVA*), D. Tisseur (*AREVA*), R. Bargian (*AREVA*), M.P. Piriou (*AREVA*)

Advanced Reactors Session 7.6**Session Title: Sodium-Cooled Reactors I****Room: Ponderosa**

Status and Future R&D Program of Prototype Fast Breeder Reactor Monju • Satoru Kondo (*JAEA*), Kazumoto Ito (*JAEA*)

A Metal Fuel Core Concept for 1000 MWt Advanced Burner Reactor • W.S. Yang (*ANL*), T.K. Kim (*ANL*), C. Grandy (*ANL*)

Current Status and Perspective of Advanced Loop Type Fast Reactor in Fast Reactor Cycle Technology Development Project Hajime Niwa (*JAEA*), Kazumi Aoto (*JAEA*), Masaki Morishita

(JAEA)

Evaluation of the Scenario for Innovative Russian Nuclear Power Development • Alexander Chebeskov (*IPPE*)

Conceptual Design Features of KALIMER-600 Sodium Cooled Fast Reactor • Dohee Hahn (*KAERI*), Yeong-II Kim (*KAERI*), Seong-O Kim (*KAERI*), Jae-Han Lee (*KAERI*), Yong Bum Lee (*KAERI*)

Metal Fueled Long Life Fast Reactor Cores with Inherent Safety • Tsugio Yokoyama Sr. (*Aitel Corp.*), Hisashi Ninokata (*Tokyo Institute of Technology*), Hiroshi Endo (*Tokyo Institute of Technology*),

Towards GEN IV Sodium Fast Reactor: A neutronic contribution • Gerald Rimpault III (*CEA*), Laurent Buiron (*CEA*), Frederic Varaine (*CEA*)

Physics Characterization of a Heterogeneous Sodium Fast Reactor Transmutation System • Samuel E. Bays (*INL*)

Partitioning and Transmutation Session 8.2**Session Title: Aqueous Based Partitioning****Room: Douglas**

Synthesis of Mixed Actinides Compounds by Hydrometallurgical Co-conversion Methods • Stephane Grandjean (*CEA*), Benedicte Arab-Chapelet (*CEA*), Anne-Charlotte Robisson (*CEA*), Sebastien Picart (*CIA*), Jean-Philippe Dancausse (*CEA*), Pascal Baron (*CEA*), Philippe Brossard (*CEA*), Dominique Warin, Dr, (*CEA*)

Separation of trivalent actinides from lanthanides using a capillary electrophoresis • Tomotaka Mori (*Radiochemical Research Laboratory*)

Separation of actinides(III) from Lanthanides(III) by extraction chromatography using new N,N'-dialkyl-N,N'-diphenylpyridine-2,6-dicarboxamides • Makoto Arisaka (*JAEA*), Masayuki Watanabe (*JAEA*), Takaumi Kimura (*JAEA*)

Extraction based on in situ formation of dithiocarbamate for separation of Am(III) from Ln(III) • Sunao Miyashita (*Sizuoka Univ.*)

Usage Of Dibutyl Phosphoric Acid And Its Zirconium Salt For Extraction Of Transplutonium Elements And Rare Earths With Their Partitioning • Boris Ya. Zilberman (*KRI*), Yury S. Fedorov (*KRI*), Olga V. Shmidt (*KRI*), Nikolay D. Goletskiy (*KRI*), Dmitry N. Shishkin (*KRI*), Vyacheslav M. Esimantovskiy (*KRI*), Sergey A. Rodionov (*KRI*), Olga N. Egorova (*KRI*), Yury V. Palenik (*KRI*)

Separation of Americium(III) from Lanthanides(III) by Thermosensitive Gel Copolymerized with TPEN Derivatives • Tatsuro Matsumura (*JAEA*), Kenji Takeshita (*Tokyo Institute of Technology*), Glenn Fugate (*Tokyo Institute of Technology*), Yoshio Nakano (*Tokyo Institute of Technology*), Atsunori Mori (*Kobe Univ.*)

Concept of Thermal-Swing Extraction System Using Thermosensitive Gel and Its Application to Nuclide Separation • Kenji Takeshita (*Tokyo Institute of Technology*), Tatsuro Matsumura (*JAEA*), Yoshio Nakano (*Tokyo Institute of Technology*)

Novel Concepts for Waste Disposal and Repository Development Session 6.1

Session Title: Repository Analyses and Optimization

Room: Cottonwoods

Factors Affecting the Disposal Capacity of a Repository at Yucca Mountain • William Nutt (ANL), Mark T. Peters (ANL), Roald Wigeland (ANL), Christopher Kouts (DOE), Dong Kim (DOE)

Minimizing the Environmental Impact of Yucca Mountain Repository by UREX+ • Denia Djokic (Univ. of California, Berkeley), Joonhong Ahn (Univ. of California, Berkeley)

Effect of Separation Efficiency on Repository Loading Values in Fuel Cycle Scenario Analysis Codes • Tracy Radel (Univ. of Wisconsin, Madison), Paul Wilson (Univ. of Wisconsin, Madison)

Geologic Repository Design and Disposal: GNEP Spent Fuel Processing Waste Volume • Roald Wigeland (ANL), Theodore H. Bauer (ANL)

Use of integrated decay heat limits to facilitate spent nuclear fuel loading to Yucca Mountain • Li Jun (North Carolina State Univ.), Man-Sung Yim (North Carolina State Univ.), Steven James Piet (INL), David Nicholas McNelis (Univ. of North Carolina, Chapel Hills)

Preclosure Safety Analysis of a Fuel Handling Operations Facility for a Geologic Repository • Fernando Ferrante (Southwest Research Inst.), George Adams (Southwest Research Inst.), Tina Ghosh (NRC), Robert K. Johnson (NRC), Rosemary Reeves (NRC) Christopher Ryder (NRC), Ali A. Simpkin (Southwest Research Inst.), Sheena Whaley (NRC),

Developing Symbiotic Power in HLNW Repository • Dean W. Schoenfeld (Univ. of Florida), James Tulenko (Univ. of Florida)

Application of SuperSTAR, Influences of Pu-Thermal in BWR to HLWs and Their Final Disposal • Eiichi Ichimura (TEPCO)

Advanced Reprocessing Session 2.5

Session Title: Fuel Cycle Modeling & Materials Control and Accountability

Room: Salmon

Mass balance and separation factor of actinides through series process test on pyroprocess • Shinichi Kitawaki (JAEA), Mineo Fukushima (JAEA), Masaki Kurata (CRIEPI), Noboru Yahagi (CRIEPI)

Material Control & Accountability Experience at the Fuel Conditioning Facility • DeeEarl Vaden (INL),

Monitoring and Control of UREX Radiochemical Processes • Sam Bryan (PNNL), Tatiana Levitskaia (PNNL)

Fundamental Chemical Kinetic And Thermodynamic Data For Purex Process Models • Robin J. Taylor (Nexia), Danny Fox (Nexia), Mark Sarsfield (Nexia), Mike Carrott (Nexia), Chris Mason (Nexia), Dave Woodhead (Nexia), Chris Maher (Nexia), Valentin Koltunov (VNINM)

Development and validation of process models for minor actinide separations processes using centrifugal contactors • Danny

Fox (Nexia), Michael Carrott (Nexia), Emmanuel Gaubert (Nexia), Chris Maher (Nexia), Robin Taylor (Nexia)

Dave Woodhead (Nexia)

Transient Extraction Behavior Analysis in Reprocessing plants with SAFE Code • Gunzo Uchiyama (JAEA), Masakazu Matsumura (JAEA), Hitoshi Abe (JAEA), Tetsuo Kurashige (JNESO), Mitsuhiro Takanashi (JNESO)

Modeling and Analysis of a Molten Salt Electrowinning System with Liquid Cadmium Cathode • K. R. Kim (KAERI), D.H Ahn, (KAERI), S. Peak (KAERI), S.W. Kwon (KAERI), J.B. Shim (KAERI), H. Chung (KAERI), E.H. Kim (KAERI)

Monte Carlo Analysis of Neutron Slowing-Down-Time Spectrometer for Fast Reactor Spent Fuel Assay • Jianwei Chen (Idaho State Univ.), Michael Lineberry (Idaho State Univ.)

Advanced Reprocessing Session 2.3b

Session Title: Recycling Operations and Operational Experience

Room: Snake

Advanced Spent Fuel Conditioning Process (ACP) Progress with respect to Remote Operation and Maintenance • Hyojik Lee (KAERI), Jong Kwang Lee (KAERI), Byung Suk Park (KAERI), Jisup Yoon (KAERI)

CORAL: A stepping stone for establishing the Indian Fast Reactor Fuel Reprocessing Technology • M. Venkataraman (IGCAR), R. Natatajan (IGCAR), Raj Baldev (IGCAR)

MOX Reprocessing at Tokai Reprocessing Plant • Katsuya Taguchi (JAEA)

Current Status of the Active Tests at Rokkasho Reprocessing Plant • Toshihide Nago (JNFL), Noriyuki Ishihara (JNFL), Yoshihiro Ohtou (JNFL)

ACTIVE TEST OF HEAD-END FACILITY AT ROKKASHO REPROCESSING PLANT • Yoshiro Yamamoto (JNFL), Satoshi Tanaka (JNFL), Syuji Kawabe (JNFL), Yoshiaki Kamada (JNFL)

Active Test of Purification Facility at Rokkasho Reprocessing Plant • Takeshi Nitta (JNFL)

Results of Active Test of Uranium-plutonium Co-denitration Facility • Teruhiko Numao (JNFL), Hiroshi Nakayashiki (JNFL), Nobuyuki Arai (JNFL), Susumu Miura (JNFL), Yoshiharu Tadahashi (JNFL), Hironobu Nakamura (JNFL), Izumi Tanaka (JNFL)

Stress corrosion cracking of zirconium used in the reprocessing plant • Chiaki Kato (JAEA), Takafumi Motooka (JAEA), Masami Numata (JAEA), Shinya Endo (JAEA), Masahiro Yamamoto (JAEA)

PRPP Panel Sessions I

Session Title: Foundations for PRPP Methodology

Room: Payette

(BNL)

• R. A. Bari Overview of PR&PP Methodology

- R. Nishimura Threat Characterization and Pathway Development
(University of California)
- P. Peterson Measures, Metrics, and Decision-Making
- G. Rochau Physical Protection Methods for Generation IV
- D. Bley The Implementation Guide

General Panel Session I**Session Title: Panel on Public Policy****Room: Summit****Advanced, Integrated Fuel Cycle Concepts Session 1.1****Session Title: Process technology aspects of integrated fuel cycle concepts****Room: Kestrels**

The Third Generation Plant Concept - The COEX Process • Jean-Luc Emin (*AREVA*), Richard Vinoche (*AREVA*), Philippe LABBE (*SGN*), Guy Maurin (*SGN*),

Launch of Fast Reactor Cycle Technology Development Project in Japan • Yutaka Sagayama (*JAEA*)

Perspective and Current Status on Fuel Cycle System of Fast Reactor Cycle Technology Development (FaCT) Project in Japan • Hideyuki Funasaka (*JAEA*), Masanori Ito (*JAEA*)

The Advanced Fuel Cycle Facility (AFCF) Role in the Global Nuclear Energy Partnership • David J. Pepson (*DOE*)

Prospective Roll of the Nuclear Fuel Cycle Engineering Laboratories of JAEA • Hisao OJIMA (*JAEA*), Shigeru DOJIRI (*JAEA*), Kazuhiko TANAKA (*JAEA*), Seiichiro TAKEDA (*JAEA*), Shigeo NOMURA (*JAEA*)

Creation of Rational MA Recycling Concept Based on Innovative Oxide Fuel with High Am Content • Kenya Tanaka (*JAEA*), Isamu Sato (*JAEA*), Tetsuya Ishii (*JAEA*), Hiroshi Yoshimochi (*JAEA*), Takeo Asaga (*JAEA*), Ken Kurosaki (*Osaka Univ.*)

Conceptual Study of Measures Against Heat Generation for TRU Fuel Fabrication System • Koichi Kawaguchi (*JAEA*), Takashi Namekawa (*JAEA*)

Concept of Advanced Spent Fuel Reprocessing based on Ion Exchange • Yasuhiko Fujii (*Tokyo Institute of Technology*), Tatsuya Suzuki (*Tokyo Institute of Technology*), Masaki Ozawa (*JAEA*)

Sustainability and Expanded Global Utilization of Nuclear Energy Session 11.1**Session Title: Globalization and Sustainability of Nuclear Energy****Room: Merlins**

Management of Recyclable Fissile and Fertile Materials • Evelyne

Bertel (OECD/NEA), Thierry Dujardin (OECD/NEA)

Scenarios for P/T implementation in Europe within a regional approach • Max Salvatores (*CEA*), Lionel Boucher (*CEA*), Paul Coddington (*PSI*), Gonzalez Enrique (*CIEMAT*), Bernard Verboomen (*SCK-CEN*), Daniel Westlén (*KTH*)

The Sustainable System for Global Nuclear Energy Utilization • Kazuo Arie (*Toshiba*), Masatoshi Kawashima (*Aitel*), Yoshio Araki (*Toshiba*), Mitsuyoshi Sato (*Toshiba*), Kenji Mori (*Toshiba*), Yoshiyuki Nakayama (*JAPC*), Kazuo Ishiguma (*JAPC*), Yoichi Fuji-ie (*Nuclear Salon Fuji-ie*)

Development of Innovative Nuclear Power in the Russian Federation • Alexander Chebeskov (*IPPE*)

A Comparison Study of Various Nuclear Fuel Cycle Alternatives • Eun-ha Kwon (*KAERI*), Won-il Ko (*KAERI*),

A Review of Nuclear Power Options for Developing Nations • Richard K. Harrison (*Univ. of Texas, Austin*), Anthony Scopatz (*Univ. of Texas, Austin*), Molly Ernesti (*Univ. of Texas, Austin*)

Nuclear's Role in the 21st Century Pacific Rim Energy Use • J'Tia Patrice Taylor (*Univ. of Illinois, Urbana Champaign*), Clifford E. Singer (*Univ. of Illinois, Urbana Champaign*)

Energy profit ratio compared • Osamu Amano (*CRIEPI*)

Developments in Nuclear Nonproliferation Technology, Policy and Implementation Session 10.1**Session Title: Safeguards Technology in an Advanced Fuel Cycle Facility****Room: Peregrines**

Neptunium flow sheet verification at reprocessing plants • Peter Rance (*IAEA*), Bruno Chesnay (*IAEA*), Tom Killeen (*IAEA*), Matthew Murray (*IAEA*), John Plumb (*IAEA*), Heikki Saukkonen (*IAEA*)

Proliferation Resistance and the Advanced Fuel Cycle Facility (AFCF) • Scott Demuth (*LANL*), Ken Thomas (*LANL*), Stephen Tobin (*LANL*)

Safeguards Approach for the Advanced Spent Fuel Conditioning Process Demonstration Facility • Ho-Dong Kim (*KAERI*), Tae-Hoon Lee (*KAERI*), Jisup Yoon (*KAERI*), Seong Won Park (*AERI*), Sang-Yoon Lee (*LANL*), Tien K. Li (*LANL*), Howard O. Menlove (*LANL*), Michael Miller (*LANL*), Adel Tolba (*IAEA*), Ryszard Zarucki (*IAEA*), Sahar Shawky (*IAEA*), Solomon Kama (*IAEA*),

A Preliminary study on the safeguard ability of the Korea Advanced Pyroprocess Facility (KAPF) • Sand-Yoon Lee (*LANL*), Kenneth Thomas (*LANL*), Johnna Marlow (*LANL*), Howard Menlove (*LANL*), Michael Miller (*LANL*), Won-il Ko (*KAERI*), Myung-Seung Yang (*KAERI*), Seong-Won Park (*KAERI*)

Spent Fuel Safeguards and Physical Protection Issues Relevant for Advanced Fuel Cycles • Brian D. Boyer (*LANL*), Eleanor T. Dixon (*LANL*), Michael Browne (*LANL*), Robert F. Parker (*LANL*)

Safety Assessment for a Potential SNF Repository and Its Implication to the Proliferation Resistance Nuclear Fuel Cycle • Yongsoo Hwang (*KAERI*), Mi Seon Jeong (*KAERI*), Ching-Seok

Seo (KAERI)

TUESDAY, SEPTEMBER 11 – 8:00 A.M.

Plenary Session II: International Programs and Status

TUESDAY, SEPTEMBER 11 – 1:30 P.M.

General Panel Session II

Session Title: History and Operation of EBR-II

Room: Ponderosa

PRPP Panel Sessions II

Session Title: PR&PP Methodology: Applications

Room: Payette

I. Therios	The ESFR Demonstration Problem
J. Choi	Qualitative Approach to Problem Evaluation
M. Zentner	Logic Tree Approach to Problem Evaluation
M. Yue L. Cheng	Markov Model Approach to Problem Evaluation
G. Cojazzi	Lessons Learned from Demonstration Problem

General Panel Session III

Session Title: TBD

Room: Summit

Advanced Fuels and Materials Session 4.3

Session Title: Fuel Modeling

Room: Willows

Application of the DART code for the assessment of advanced fuel behavior • Jeff Rest (ANL), Totju Totev (ANL)

Modeling of Nuclear Fuel Behavior in Advanced Nuclear Burners • Totju Totev (ANL), Jeff Rest (ANL)

Fuel Behavior Modeling Issues Associated with Future Fast Reactor Systems • Abdellatif M. Yacout (ANL), Gerard L. Hofman (ANL), John Lambert (INL), Yeon Soo Kim (ANL)

Performance Limit Analysis of a Metallic Fuel for KALIMER • Byoung-Oon Lee (KAERI), Chan Bock Lee (KAERI), Jin Sik Cheon (KAERI)

Development of Probabilistic Design Method for Annular Fuels • Takayuki Ozawa (Plutonium Fuel Development Center)

Physical Characteristics of LWRs and SCLWRs Loaded by (233U-Th-238U) Oxide Fuel with Small Additions of 231Pa • Gennady Genrikhovich Kulikov (ISTC)

Calculation of The Pressure Vessel Failure Fraction of Fuel Particle of Gas Turbine-High Temperature Reactor 300C • Jun Aihara (JAEA), Shohei Ueta (JAEA), Tomoo Takayama (JAEA), Hiroyuki Sato (JAEA), Kazuhiro Sawam (JAEA)

PRPP Panel Sessions II

Session Title: PR&PP Methodology: Applications

Room: Payette

I. Therios	The ESFR Demonstration Problem
J. Choi	Qualitative Approach to Problem Evaluation
M. Zentner	Logic Tree Approach to Problem Evaluation
M. Yue L. Cheng	Markov Model Approach to Problem Evaluation
G. Cojazzi	Lessons Learned from Demonstration Problem

General Panel Session III

Session Title: TBD

Room: Summit

Partitioning and Transmutation Session 8.3

Session Title: Partitioning and Transmutation Strategies

Room: Douglas

Partitioning and Transmutation Technology in Japan and its Benefit on High-level Waste Management • Hiroyuki Oigawa (JAEA), Kenji Nishihara (JAEA), Takeshi Yokoo (CRIEPI)

Down selection of partitioning routes and transmutation fuels for P/T strategies implementation • Max Salvatores (CEA), Concetta Fazio (CEA), Wonsik Yang (ANL)

Assessment of the Impact of Partitioning and Transmutation on Final Nuclear Waste Disposal for European Repository Conditions • Rahim Nabbi (FZJ)

Partition and Transmutation of actinides - What to expect • Herve G. Masson (AREVA), Dominique Grenache (AREVA), Pierre Chambrette (AREVA)

The DOVITA Transmutation Program - Results of the 15-year activities of RIAR • Mikhail Kormilitsyn (RIAR)

Advanced ORIENT Cycle, Toward Realizing Intensified Transmutation and Utilization of Radioactive Wastes • Masaki Ozawa (JAEA), Shin-Ichi Koyama (JNCDI), Tatsuya Suzuki (Tokyo Institute of Technology), Reiko Fujita (Toshiba), Hitoshi Mimura (Tohoku Univ.), Yasuhiko Fujii (Tokyo Institute of

Technology)

Mathematical Model for Transmutation System with a Two-Member Chain and Variable Separation Coefficients • Joonhong Ahn (*Univ. of California, Berkeley*), Masaki Kurata (*CRIEPI*)

Acceptable Requirement of Decontamination Factor for LLW Disposal of PEACER Pyroprocessing Wastes • Sung Il Kim (*KAIST*), MinHo Ahn (*KAIST*), Kun Jai Lee (*KAIST*)

Novel Concepts for Waste Disposal and Repository Development Session 6.2**Session Title: Repository Analyses & Optimization II****Room: Cottonwoods**

GNEP and Waste Management Issues • Alex Murray (*NRC*), Amy Snyder (*NRC*), Stewart Magrude (*NRC*), Phillip Reed (*NRC*)

Development of Korean Reference HLW Disposal System under the Korean Representative Geologic Conditions • Heui-Joo Choi (*KAERI*), Jong Youl Lee (*KAERI*), Jonwon Choi (*KAERI*)

Concept and design of the JAEA KMS for Geological Disposal of HLW • Hideaki Osawa (*JAEA*), Katsushi Nakano (*JAEA*), Morimasa Naito (*JAEA*), Hiryuki Umeki (*JAEA*), Hitoshi Makino (*JAEA*), Hiroyasu Takase (*Quintessa Limited KK*), Ian G. McKinley (*McKinley Consulting*)

Research on Long Term Safety of Nuclear Waste Disposal at the Research Center Karlsruhe, Germany • Klaus Gompper (*FZK*), Dirk Bosbach (*FZK*), Melissa Denecke (*FZK*), Horst Geckeler (*FZK*), Bernhard Kienzler (*FZK*), Reinhard Lenze (*FZK*)

Repository Size for Deep Geological Disposal of Partitioning and Transmutation High Level Waste • Kenji Nishihara (*JAEA*)

Nuclear Waste Disposal in the Age of Reprocessing • James Conca (*New Mexico State Univ.*), Mick Apted (*Monitor Scientific LLC*)

An Analysis of Dual Zone Loading for Shipping Spent Nuclear Fuel • William C. Allen (*North Carolina State Univ.*), Man-Sung Yim (*North Carolina State Univ.*)

Examining Repository Loading Options to Expand Yucca Mountain Repository Capacity • Li Jun (*North Carolina State Univ.*), Mark Nicholson (*North Carolina State Univ.*), W. Cyrus (*North Carolina State Univ.*), Sung Yim (*North Carolina State Univ.*), David Nicholas (*Univ. of North Carolina, Chapel Hill*)

Advanced Waste Management Technology Session 5.2**Session Title: Advances in Treating Nuclear Wastes: Decontamination, destruction of organics and steam reforming****Room: Salmon**

Treatment of Radioactive Organic Wastes by an Electrochemical Oxidation • Ki Hong Kim (*KAERI*)

Fluidized Bed Steam Reforming (*FBSR*) Technology for High Organic and Nitrate Waste Streams • Carol M. Jantzen (*SRNL*), Michael Williams (*SRNL*)

Fenton Treatment of Organic Liquid Waste • Céline Violas (*AREVA*), Danielle Qiviger (*AREVA*), Carol Redonnet (*AREVA*), Jean-Luc Emin (*AREVA*), Isabelle Bisel (*CEA*)

Environmentally sustainable processes for nuclear waste management • Chein M. Wai (*Univ. of Idaho*)

Supercritical Fluids for Nuclear Wastes Decontamination. CEA Research Status • Fournel Bruno (*CEA*), Roubaud Anne (*CEA*), Sarrade Stehane (*CEA*)

Waste handling activities in glovebox dismantling facility • Akihiro Kitamura (*JAEA*)

A Study on the Salt Clean-up with Solid Cathode- Perforated Ceramic Container • S. W. Kwon (*KAERI*), S. Peak (*KAERI*), J.H. Lee (*KAERI*), K. R. Kim (*KAERI*), J. B. Shim (*KAERI*), D.H. Ahn (*KAERI*), E.H. Kim (*KAERI*)

Advanced Reprocessing Session 2.3a**Session Title: Advanced Recycling Technology****Room: Snake**

Advanced separation processes for sustainable nuclear systems • Pascal Baron (*CEA*), Michael Masson (*CEA*), Christine Rostaing (*CEA*), Bernard Boulis (*CEA*)

EUROPART. European Research Programme for Partitioning of Minor Actinides • Charles MADIC (*CEA*), Michael Hudson (*Univ. of Reading*), Pascal Baron (*CEA*), Noel Ouvrier (*CEA*), Clement Hill (*CEA*), Francoise Arnaud (*ECPM*), Amparo Espartero (*CIEMAT*), Jean-François Desreux (*Liège Univ.*), Giuseppe Modolo (*ISR*), FZ-Jülich Rikard Malmbeck (*EC-JRC-ITU*), Stephane Bourg (*ENEA*), Jan Uhlir (*NRI*)

Fuel Disposition and Reprocessing Challenges • Gale Voyles, Consultant

The flexibility of an industrial treatment recycling facility • Thibault Louvet (*AREVA*), Ian Hunter (*AREVA*), Philippe Aužière (*AREVA*), Jen-Luc Emin (*AREVA*), Estelle Helaine (*AREVA*)

Nuclear Processing - A Simple Cost Equation or a Complex Problem? • Paul Scully (*Nexia*), Zara Banfield (*Nexia*), Bruce Hanson (*Nexia*), Anthony Banford (*Nexia*)

GANEX : Adaptation of the DIAMEX-SANEX Process for the Group Actinide Separation • Manuel Miguirditchian (*CEA*), Laurence Chareyre (*CEA*), Clement Hill (*CEA*)

Flexible conception of spent nuclear fuel management • Alexander Bychkov (*RIAR*)

The Radiochemist(ry) in the Nuclear Fuel Cycle • Andreas Kronenberg (*Oak Ridge Associated Universities*), Gregory R. Choppin (*Florida State Univ.*)

TUESDAY, SEPTEMBER 11 – 5:00 P.M.**Special Session I****Session Title: SCNN Session****Room: Summit**

WEDNESDAY, SEPTEMBER 12 – 8:00 A.M.**PRPP Panel Sessions III****Session Title: PR&PP and Other Methodologies and Applications****Room: Payette**

M-S. Yang	INPRO Methodology and Harmonization with PR&PP
D. Greneche	The French Program on PR&PP
M. Senzaki	The Japanese Program on PR&PP
E. Pujol	PR & PP and International Safeguards
R. Bari	
E. Wonder et al	Applications of PR&PP to GNEP

General Panel Session IV Session 13.5**Session Title: GNEP and Reactors for International Deployment****Room: Summit**

Common User Criteria and Deployment Roadmap • Atam Rao (*IAEA*)

Technical Requirements For Reactors To Be Deployed Internationally for the Global Nuclear Energy Partnership • Daniel Ingwersen (*ORNL*)

Status of IRIS Reactor for Near Term Worldwide Deployment Within the Global Nuclear Energy Partnership (GNEP) Paradigm • Bojan Petrovic (*Westinghouse*), Mario D. Carelli (*Westinghouse*)

Status of the 4S Design Activities • Norihiko Handa (*Toshiba*)

The Lead-Cooled Fast Reactor: Concepts for Small and Medium Sized Reactors for International Deployment • Craig F. Smith (*LLNL*), James Joseph Sienicki (*ANL*), Luciano Cinotti (*Del Fungo Giera Energia*)

Progress in the Multinational Design Evaluation Process Program • Jeff Jacobson (*NRC*)

Advanced Fuels and Materials Session 4.2**Session Title: Non-Oxide Fuel Fabrication****Room: Willows**

Engineering-Scale Development of Injection Casting Technology for Metal Fuel Cycle • Takanari Ogata (*CRIEPI*), Takeshi Tsukada (*CRIEPI*)

A Zirconium Cermet for Transuranic Isotope Storage and Burning • Aaron Totemeier (*Texas A&M Univ.*), Sean M. McDeavitt (*Texas A&M Univ.*)

Synthesis and Characterization of refractory actinide compounds • Andreas Kronenberg (*ORNL*), Alex Besenyo (*International Bio-Analytical Industries*)

GEN IV : Carbide Fuel Elaboration for the 'Futurix Concepts' experiment • Sephane Vaudez (*CEA*), Laurent Paret (*CEA*)

Production of ZrC matrix for use in Gas Fast Reactor composite fuels • Gokul Vasudevanurthy (*Univ. of South Carolina*), Travis W. Knight (*Univ. of South Carolina*), Elwyn Roberts (*Univ. of South Carolina*), Thad Adams (*SRNL*)

Synthesis of Uranium Nitride and Uranium Carbide Powder by Carbothermic Reduction of Oxide Feedstock • John T. Dunwoody (*LANL*), Kenneth McClellan (*LANL*), Stewart Voit (*LANL*), Heather Volz (*LANL*), Robert Hickman (*NASA*)

Synthesis and Characterization of Actinide Nitrides • Brian J. Jaques (*Boise State Univ.*), Darryl Butt (*Boise State Univ.*), Brian M. Marx (*Boise State Univ.*), A.S. Hamdy (*Boise State Univ.*), Daniel Osterberg (*Boise State Univ.*), Gordon Balfour (*Boise State Univ.*)

An Evaluation of Potential Liner Materials for Eliminating FCCI in Irradiated Metallic Nuclear Fuel Elements • Dennis S. Keiser Jr. (*INL*), James Cole (*INL*)

Advanced Waste Management Technology Session 5.4**Session Title: Technologies and Advances in Off-gas Treatment****Room: Ponderosa**

Direct Assay of Filter Media Following DEOX Testing • Brian Westphal (*INL*), Mark Huntley (*INL*), Calvin Morgan (*INL*), Paul Lind (*INL*), David Sell (*INL*), Ken Bateman (*INL*), Dennis Wahlquist (*INL*)

Cesium Trapping Characteristics on Fly Ash Filter according to the Different Carrier Gases • Shin Jin-Myeong (*KAERI*), Jang-Jin Park (*KAERI*), Kee-Chan Song (*KAERI*)

A study on vol-oxidizer with oxygen concentration controller for scale-up design • Young Hwan Kim (*KAERI*), Byung Suk Park, (*KAERI*), Jae Hoo Jung (*KAERI*), Jisup Yoonm (*KAERI*)

Numerical Approach for the Voloxidation Process of an Advanced Spent Fuel Conditioning Process (ACP) • Byung Heung Park (*KAERI*), Sang Mun Jeong (*KAERI*), Ching-Seok Seo (*KAERI*),

Review of Off-Gas Treatment Technology Relevant to Spent Nuclear Fuel Reprocessing • Robert T. Jubin (*ORNL*), Barry Spencer (*ORNL*), R.M. Counce (*ORNL*)

Evaluation of radioactivity release at Rokkasho Reprocessing Plant • Hiroshi Sugiyama (*JNFL*), Noriyuki Ishihara (*JNFL*), Akira Maki (*JNFL*)

Waste Management Planned for the Advanced Fuel Cycle Facility • Nick R. Soelberg (*INL*), Dirk Gombert (*INL*)

Partitioning and Transmutation Session 8.1**Session Title: Reactor Transmutation****Room: Douglas**

Practical Combinations of Light-Water Reactors and Fast Reactors for Future Actinide Transmutation • Emory D. Collins

(ORNL), John-Paul Renier (ORNL)

Actinide Transmutation in Fission Reactors • Jorshan Choi (LLNL), Thomas H. Pigford (Univ. of California, Berkeley)

Minor actinides transmutation in SFR depleted uranium radial blanket, neutronic and thermal hydraulic evaluation • Laurent Buiron (CEA), Denis Lorenzo (CEA), Bernard Valentin (CEA), Frederic Varaine (CEA)

Improvement on the Prediction Accuracy of Transmutation Properties for Fast Reactor Core Using the Minor Actinides Irradiation Test Data on the JOYO MK-II Core • Kazuteru Sugino (JAEA)

Optimisation of the Hf-clad fuel concept for minor actinide transmutation in standard BWRs • Daniel Westlén (KTH), Janne Wallenius (KTH)

Plutonium Transmutation in Thorium Fuel Cycle • Vladimir Necas (Slovak Univ. of Technology, Bratislava), Juraj Breza (Slovak Univ. of Technology, Bratislava), Petr Darilek (VUJE Inc.)

Comparison of PWR-IMF and FR Fuel Cycles • Petr Darilek (VUJE, Inc.), Radoslav Zajac (VUJE, Inc.), Juraj Breza (Slovak Univ. of Technology, Bratislava), Vladimir Necas (Slovak Univ. of Technology, Bratislava)

Minor Actinide Transmutation Physics for Low Conversion Ratio Sodium Fast Reactors • Samuel E. Bays (INL), Rodolfo Ferrer (INL), Mehdi Asgari (INL), Benoit Forget (INL)

Novel Concepts for Waste Disposal and Repository Development Session 6.3

Session Title: Repository Testing and Materials Analysis

Room: Cottonwoods

In situ experiments planned at KAERI Underground Research Tunnel • Sangki Kwon (KAERI), Won Jin Cho (KAERI), Jong-Won Choi (KAERI)

Nuclear Waste and Other Hazardous Materials in the Biosphere • Jay F. Kunze (Idaho State Univ.), Gary M. Sandquist (Applied Science Professionals, LLC)

Characterization of Advanced Neutron Absorber by Means of Neutron Transmission • Gregg W. Wachs (INL), William Hurt (INL)

Optimizing Nuclear Waste Repository Development by Implementing Experimental Data on Radiolysis • Patricia Paviet-Hartmann (Idaho State Univ.), Thomas Hartmann (Idaho State Univ.)

Korean Bentonite and Its Thermal Property as a Buffer Material • Geon Youg Kim (KAERI), Seung Soo Kim (KAERI), Jong-Won Choi (KAERI), Yong Kwon Koh (KAERI)

Enhanced Spent Nuclear Fuel Containers with Thermal Spray Amorphous Metal and Ceramic Coatings • Joseph Farmer (LLNL), Jor-Shan Choi (LLNL)

A New Neutron Absorber Material for Criticality Control • Alan H. Wells (Consultant)

Advanced Reprocessing Session 2.1c

Session Title: Actinide Extraction

Room: Salmon

Extractants separation in DIAMEX-SANEX process • Xavier Heres (CEA), Estelle Ameil (CEA), Isabelle Martiniz (CEA), Pascal Baron (CEA), Clement Hill (CEA)

Neptunium – Uranium – Plutonium Co-Extraction in TBP-based Solvent Extraction Processes for Spent Nuclear Fuel Recycling • Stuart T. Arm (PNNL), Gregg Lumetta (PNNL), John Abrefah (PNNL), Sergey Sinkov (PNNL)

Active Test of Separation Facility at Rokkasho Reprocessing Plant • Tadahiro Iseki (JNFL), Naoki Takahashi (JNFL), Yuuji Tanaka (JNFL)

Partitioning of Minor Actinides from PUREX Raffinate by the TODGA Process • D. Magnusson (ITU), B. Christiansen (ITU), J.-P. Glatz (ITU), R. Malmbeck (ITU), Giuseppe Modolo (Forschungszentrum Jülich GmbH), D. Serrano Purroy (ITU), C. Sorel (CEA)

Understanding the Chemistry of Uncommon Americium Oxidation States for Application to Actinide/Lanthanide Separations • Leigh R. Martin (INL), Bruce J. Mincher (INL), Nicholas Schmitt (INL)

Speciation of Plutonium and Other Metals under UREX Process Conditions • Peter Tkac (Oregon State Univ.), Alena Paulenova (Oregon State Univ.), Brent S. Matteson (Oregon State Univ.)

Advanced Processing Session 2.4a

Session Title: Pyrochemistry 1

Room: Snake

Pyroprocess Technology Development in Japan • Tadashi Inoue (CRIEPI), Munetaka Myouchin (JAEA), Yasuo Arai (JAEA),

Pyrochemistry Assessment at CEA : Last Experimental Results • Jerome Lacqueux (CEA), Stephane Bourg (CEA), Hubert Boussier (CEA), Olivier Conacar (CEA), Annabelle Laplace (CEA), Pascal Baron (CEA), Bernard Boulle (CEA), Agnes Grandjean (CEA), Dominique M. Warin (CEA), Philippe Brossard (CEA)

Pyrochemical Technology Process Development and Demonstrations at INL • K. Michael Goff (INL), Robert Benedict (INL)

Fundamental Study on Electrolyte Recycle Process by Phosphate Conversion Technique • Ippei Amamoto (JAEA), Hirohide Kofuji, (JAEA), Munetaka Myochin (JAEA), Takayuki Terai (Univ. of Tokyo)

“Double salt” flow sheet for pyrochemical recycle of fast reactor spent fuel • Mikhail Kormilitsyn (RIAR)

Electrolytic Reduction of Spent Nuclear Oxide Fuel -- Effects of Fuel Form and Cathode Containment Materials on Bench-Scale Operations • Steven Herrmann (INL)

Direct Electrolytic Reduction of UO₂ vs. U₃O₈ • Laurel Barnes (ANL), James Willit (ANL)

Integrated Electrowinning Efficiency Test for Pyrochemical Fuel Cycles • Shelly X. Li (INL), DeeEarl Vaden (INL), Brian Westphal

(INL), Robert Benedict (INL), Thomas A. Johnson (INL)

General Panel Session IV Session 13.5

Session Title: GNEP and Reactors for International Deployment

Room: Summit

Technical Requirements For Reactors To Be Deployed Internationally for the Global Nuclear Energy Partnership • Daniel Ingersoll (ORNL)

Status of IRIS Reactor for Near Term Worldwide Deployment Within the Global Nuclear Energy Partnership (GNEP) Paradigm

- Bojan Petrovic (*Westinghouse*), Mario D. Carelli (*Westinghouse*)

Status of the 4S Design Activities • Norihiko Handa (*Toshiba*)

The Lead-Cooled Fast Reactor: Concepts for Small and Medium Sized Reactors for International Deployment • Craig F. Smith (LLNL), James Joseph Sienicki (ANL), Luciano Cinotti Del Fungo (*Giera Energia*)

Progress in the Multinational Design Evaluation Process Program

- Jeff Jacobson (NRC)

Advanced, Integrated Fuel Cycle concepts Session 1.2

Session Title: Systems analysis or strategic implications of integrated fuel cycle concepts

Room: Kestrels

Main findings of the RedImpact project • Daniel Westlén (KTH), Enrique M. Gonzalez-Romero (*Ciemat*), Dominique Greneche (AREVA), Lionel Boucher (CEA), Jan Marivoet (SCK-CEN), Colin Zimmerman (Nexia), Werner von Lensa (Forschungszentrum Jülich)

A New Paradigm: Near-Complete Recycling of Spent Fuel-A Path to Sustainable Nuclear Energy • Guillermo D. Del Cul (ORNL), Barry B. Spencer (ORNL), Emory D. Collins (ORNL)

Rethinking the Thorium Fuel Cycle: An Industrial Point of View • Dominique Greneche (AREVA)

Regulation of Global Nuclear Energy Partnership Facilities and Associated Special Nuclear Material • Alex Murray (NRC), Amy Snyder (NRC), Stewart Magruder (NRC), Phillip Reed (NRC)

A metallic fuel cycle concept from spent oxide fuel to metallic fuel • Reiko Fujita (*Toshiba*), Masatoshi Kawashima (*Toshiba*), Misuaki Yamaoka (*Toshiba*), Kazuo Arie (*Toshiba*)

Regulatory Challenges Facing the Global Nuclear Energy Partnership • Edwin S. Lyman (*Union of Concerned Scientists*)

Spent Fuel Accumulations and Arisings in 'Fuel User' States: Implications for a World Nuclear Partnership • Michael Lineberry (*Idaho State Univ.*)

Investigation on the Harmonious Transition from LWR to FR Cycle for the Nuclear Sustainability • Tetsuo Fukasawa (*Hitachi*), Junichi Yamashita (*Hitachi*), Kuniyoshi Hoshino (*Hitachi*), Akira Sasahira (*Hitachi*), Koji Fujimura (*Hitachi*)

Nuclear Production of Hydrogen Session 9.1

Session Title: Nuclear Production of Hydrogen

Room: Merlins

Developments in SO₃ Decomposition for Nuclear Hydrogen Production • Sellathurai (Sam) Suppiah (AEOC), Geng Tan (AEOC), Lyse Deschenes (AEOC)

Conceptual Design of the HTTR-IS Hydrogen Production System
- Dynamic Simulation Code Development for the Advanced Process Heat Exchangers in the HTTR-IS System • Hiroyuki Sato (JAEA), Shinji Kubo (JAEA), Nariaki Sakaba (JAEA), Hirofumi Ohashi (JAEA), Tetsuo Nishihara (JAEA), Kazuhiko Kunitomi (JAEA)

Long-term Nuclear Knowledge Management on Nuclear Production of Hydrogen-A Case Study of the Japan Atomic Energy Research Institute (JAERI) • Kazuaki Yanagisawa (JAEA)

Hydrogen Production by High Temperature Electrolysis with Nuclear Reactor • Takashi Ogawa (*Toshiba*), Seiji Fujiwara (*Toshiba*), Shigeo Kasai (*Toshiba*), Kazuya Yamada (*Toshiba*)

Evaluation of the Cell Voltage of Electrolytic HI Concentration for Thermochemical Water-Splitting • Nobuyuki Tanaka (JAEA), Mitsunori Yoshida (JAEA), Hiroyuki Okuda (JAEA), Shinji Kubo (JAEA), Kaoru Onuki (JAEA)

Modeling a filter press electrolyzer by using two coupled codes within Nuclear GEN. IV Hydrogen Production • Jean-Pierre Feraud (CEA), Florent Jomard (CEA), Denis Ode (CEA), Jean Duhamet (CEA), Jacques Morandini (Astek), Yves Du Terrail Couvat (*Laboratoire EPM*), Jean-Pierre Caire (LEPMI)

Advanced Reactors Session 7.1

Session Title: High Temperature Reactors

Room: Peregrines

The Pebble Recirculation Experiment (PREX) for the AHTR • Philippe Bardet (*Univ. of California, Berkeley*), James An (*Univ. of California, Berkeley*), James Franklin (*Univ. of California, Berkeley*), D. Huang (*Univ. of California, Berkeley*), Kenny Lee (*Univ. of California, Berkeley*), Michael Toulouse (*Univ. of California, Berkeley*), Per Peterson (*Univ. of California, Berkeley*)

TRU-fueled VHTRs: Design, Performance and Applications • Pavel V. Tsvetkov (*Texas A&M Univ.*), David E. Ames II (*Texas A&M Univ.*), Megan Pritchard (*Texas A&M Univ.*), Ajodeji Alajo (*Texas A&M Univ.*)

Neutronic and Depletion Analysis of the PB-AHTR • Massimiliano Fratoni (*Univ. of California, Berkeley*), Ehud Greenspan (*Univ. of California, Berkeley*), Per Peterson (*Univ. of California, Berkeley*)

A Modular Radiant-Heat-Initiated Passive Decay-Heat-Removal System for Salt-Cooled Reactors • Charles W. Forsberg (ORNL)

Transient Thermal Response of the PB-AHTR to Loss of Forced Cooling • Alain Griveau (*Univ. of California, Berkeley*), Francois-Paul Fardin (*Univ. of California, Berkeley*), Haihua Zhao (INL),

Per Peterson (*Univ. of California Berkeley*)

AMBIDEXTER-DUPIC: An LWR-MSR Symbiont Operating on an Effective and Efficient Fuel Cycle • Tae Kyu Ham (*Ajou Univ.*), Y.J. Lee (*Ajou Univ.*), S.K. Oh (*Ajou Univ.*)

The Non-Moderated TMSR, an Efficient Actinide Burner and a Very Promising Thorium Breeder • Elsa N. Merle-Lucotte (*CNRS*), Daniel Heuer (*CNRS*), Christian Le Brun (*CNRS*), Ludovic Mathieu (*CNRS*), Michel Allibert (*CNRS*), Véronique Ghetta (*CNRS*), Oliver Koberl (*CNRS*), Eric Liatard (*CNRS*)

WEDNESDAY, SEPTEMBER 12– 1:00 P.M.

Advanced Fuels and Materials Session 4.1

Session Title: Oxide Fuel Fabrication

Room: Willows

Study on Characteristics of Recycled MOX Powder Suitable for Low Density Pellet Fabrication • Tatsutoshi Murakami (*JAEA*), Kiichi Suzuki (*JAEA*), Shigenori Aono (*JAEA*)

Research and development of americium-containing mixed oxide fuel for fast reactors • Kosuke Tnaka (*JAEA*), Masahiko Osaka (*JAEA*), Isamu Sato (*JAEA*), Shuhei Miwa (*JAEA*), Shin-ichi Koyama (*JAEA*), Yohei Ishi (*JAEA*), Takashi Hirosawa (*JAEA*), Hiroshi Obayashi (*JAEA*), Hiroshi Yoshimochi (*JAEA*), Kenya Tanaka (*JAEA*)

Fabrication of advanced oxide fuel containing minor-actinide for use in fast reactor • Shuhe Miwa (*JAEA*), Masahiko Osaka (*JAEA*), Kosuke Tanaka (*JAEA*), Yohei Ishi (*JAEA*), Yoshimo Chi (*JAEA*), Kenya Tanaka (*JAEA*)

Actual Scale MOX Powder Mixing Test for JMOX • Shuichi Osaka (*JNFL*)

Preparation of low oxygen-to-metal mixed oxide fuels for advanced fast reactors • Masato Kato (*JAEA*), Shinya Nakamichi (*JAEA*), Tatsuo Takano (*JAEA*)

Separation of Particles Precipitated from (U,RE)3O8 Powder Oxidation by Dry Process • Lee Jae Won (*KAERI*), Lee Jung Won (*KAERI*), Yang Myung Seung (*KAERI*), Song Kee Shan (*KAERI*), Park Guen II (*KAERI*)

Sensitivity Analysis of the Dry-Process CANDU Fuel Pellet Design Parameters • Hangbok Choi (*KAERI*), Ho Jin Ryu (*KAERI*)

Pellet Fabrication Characteristics of TRU-Oxides Produced by Modified Direct Denitration • Elisabeth A. Walker (*ORNL*), Raymond J Vedder (*ORNL*), L. Kevin Felker (*ORNL*)

Advanced Reactors Session 7.5

Session Title: Advanced Water Cooled Reactors I

Room: Ponderosa

Reactivity Control Mechanisms for a HPLWR Fuel Assembly • Marc Schlagenhaufner (*FZK*), Bastian Vogt (*FZK*), Thomas Schulenberg (*FZK*)

Mechanical Design of Core Components for a High Performance Light Water Reactor with a Three Pass Core • Kai Fischer (*FZK*),

Tobias Schneider (*Univ. of Karlsruhe*), Thomas Redon (*Univ. of Karlsruhe*), Thomas Schulenberg (*FZK*), Joerg Starflinger (*FZK*)

Mixing Coefficients for Sub-Channel Analyses with Supercritical Water • Bastian Vogt (*FZK*), Eckart Laurien (*Univ. of Stuttgart*), Andreas G. Class (*FZK*), Thomas Schulenberg (*FZK*)

Design and Optimization of a Backflow Limiter for a High Performance Light Water Reactor • Kai Fischer (*FZK*), Eckart Laurien (*Univ. of Stuttgart*), Andreas G. Claas (*FZK*), Thomas Schulenberg (*FZK*)

Passive Safety Small Reactor for Distributed Energy Supply - Reduced Moderator Heavy Reactor • Toshihisa Ishida (*JAEA*), Masanori Okamoto (*JAEA*), Masaki Morishita (*JAEA*)

Partitioning and Transmutation Session 8.4

Session Title: Accelerator Driven Transmutation

Room: Douglas

ECATS: an international experimental program on the reactivity monitoring of Accelerator Driven Systems - Status and progress • Gilbert Granget (*CEA*), Hamid Aït Abderrahim (*SCK/CEN*), Baeten Peter (*SCK/CEN*), Annick Billebaud (*CNRS*), Enrique M. Gonzalez-Romero (*CIEMAT*), Joachim Knebel (*FZK*), Roberto Rosa (*ENEA*), Massimo Salvatores (*CEA*), Michael W. Schikorr, (*FZK*), Dominique Warin (*CEA*)

Investigation of nuclear waste transmutation by using electron accelerator-driven systems • Paul Swaney (*North Carolina State Univ.*), Man-Sung Yim (*North Carolina State Univ.*), David Nicholas McNelis (*North Carolina State Univ.*)

400MWth gas cooled accelerator driven transmuter core neutronic benchmark • Chaber Christine (*CEA*), Gerald Rimpault (*CEA*), Peneliau Yannick (*CEA*), Daniele Plisson-Rieunier (*CEA*), Dirceu F. da Cruz (*NRG*), Edouard Malambu (*SCK/CEN*), Andrei Rineiski (*FZK*)

Progress of Nitride Fuel Cycle Research for Transmutation of Minor Actinides • Yasuo Arai (*JAEA*), Mitsuo Akabori (*JAEA*), Kazuo Minato (*JAEA*)

MEGAPIE SPALLATION TARGET: Irradiation of the first prototypical spallation target for future ADS Latge • Christian Henri (*CEA*), Groeschel Friedrich (*PSI*)

Feasibility Study of Accelerator Driven System proposed by JAEA • Takanori Sugwara (*JAEA*), Kenji Nishihara (*JAEA*), Kazufumi Tsujimoto (*JAEA*)

Effects of TRU Distributions of Electron Accelerator-Driven Subcritical Core Systems on Transmutation • Stephen Brian Yodersmith (*North Carolina State Univ.*), Man-Sung Yim (*North Carolina State Univ.*)

Advanced Waste Management Technology Session 5.1

Session Title: Development of HLW Forms

Room: Cottonwoods

Cold Crucible Induction Melter Applications to the Vitrification of

High-Level Radioactive Waste • Eric Tchemitcheff (*AREVA*), Dorothy Davidson (*AREVA*)

Development of models to predict the redox state of nuclear waste containment glass • Olivier Pinet (*CEA*), Guirat Ramzi (*CEA*), Phalippou Jean (*CEA*), Advocat Thierry (*CEA*)

Development of Glass Matrix for Immobilization of Cs/Sr fraction after HLW partitioning • Albert S. Aloy I (*KRI*), Alexander V. Trofimenko (*KRI*)

HIPed Tailored Ceramic Waste Forms for the Immobilization of Cs, Sr and Tc • Melody L. Carter (*ANSTO*), Bruce Begg (*ANSTO*), Eric Vance (*ANSTO*), Marin Stewart (*ANSTO*), Sam Moricca (*ANSTO*), Julia L Tripp (*INL*)

Separations and Management Options for Cesium and Strontium in Spent Nuclear Fuel • Barry Spencer (*ORNL*), Guillermo Daniel Del Cul (*ORNL*), Emory D. Collins (*ORNL*)

Radiation and Chemical Durability of the Waste Form with Ferrite Garnet Structure • Anatoly Lukinykh (*RIAR*), Sergey Tomlin (*RIAR*), Andry Lizin (*RIAR*)

Bringing the advantages of industrially mature HIP technology to clean up of radioactive waste • Sam Moricca (*ANSTO*), Bruce Begg (*ANSTO*), Martin W. Stewart (*ANSTO*), Arthur Day (*ANSTO*)

Benefits of Tailored Ceramic and Glass-Ceramic Waste Forms for Plutonium Residue Wastes • Bruce Begg (*ANSTO*), Arthur Day (*ANSTO*), Martin W. Stewart (*ANSTO*), Sam Moricca (*ANSTO*), Charlie Scales (*Nexia*), Ewan Maddrell (*Nexia*)

A Concept of some fission products utilization with the aim to immobilize long-lived radionuclides presenting in the spent fuel • Yuri Alekseevich Pokhitonov (*KRI*)

Advanced Reprocessing Session 2.2

Session Title: Demonstrations and Engineering for Advanced Separations Technology

Room: Salmon

Overview of the GNEP Coupled End-to-End (CETE) Demonstration Project at the Oak Ridge National Laboratory • Gary L. Bell (*ORNL*), J.L. Binder (*ORNL*), E.D. Collins (*ORNL*), M. H. Ehinger (*ORNL*), L. Kevin Felker (*ORNL*), R. T. Jubin (*ORNL*), S.C. Marschman (*ORNL*), B. B. Spencer (*ORNL*), R. M. Wham (*ORNL*), D. F. Williams (*ORNL*)

An option making for nuclear fuel reprocessing by using supercritical carbon dioxide • Youichi Enokida (*Nagoya Univ.*), Kayo Sawasa (*Nagoya Univ.*), Takashi Shimada (*Mitsubishi*), Ichiro Yamamoto (*Nagoya Univ.*)

Feasibility study of the plant for LWR spent nuclear fuel reprocessing by pyrochemical methods • A.V. Bychkov (*NIIAR*), M. V. Kormilitsyn (*NIIAR*), Yu S. Sokolovsky (*NIIAR*), Catherine Baganz (*AREVA*), Serge Lopoukhine (*AREVA*), Guy Maurin (*SGN*), Michel Medzadurian (*SGN*), Yu. P. Savotchkina (*NIIAR*)

Development of Engineering Technology Basis for Industrialization of Pyrometallurgical Reprocessing • Tadafumi Koyama (*CRIEPI*), Takatoshi Hijikata (*CRIEPI*), Takeshi Yokoo (*CRIEPI*), Tadashi Inoue (*CRIEPI*)

Clean in Place and Reliability Testing of a Commercial 12.5 cm Annular Centrifugal Contactor at the INL • Nick R. Mann (*INL*), Troy G. Garn (*INL*), David Meikrantz (*INL*), Jack Law (*INL*), Terry Todd (*INL*)

Hydraulic Performance and Mass Transfer Efficiency of Engineering Scale Centrifugal Contactors • David H. Meikrantz (*INL*), Troy Garn (*INL*), Nick Mann (*INL*), Jack Law (*INL*), Terry Todd (*INL*)

Development of Centrifugal Contactor with High Reliability • Nobuo Okamura (*JAEA*), Masayuki Takeuchi (*JAEA*), Hideki Ogino (*JAEA*), Takeshi Kase (*JAEA*), Tsutomu Koizumi (*JAEA*)

Intergranular corrosion mechanism of ultra-low carbon Type 304 stainless steel in a nuclear reprocessing plant • Fumiyoji Ueno (*JAEA*), Chiaki Kato (*JAEA*), Takafumi Motook (*JAEA*), Shiro Ichijawam (*JAEA*), Masahiro Yamamoto (*JAEA*)

Advanced Processing Session 2.4b

Session Title: Pyroprocessing II

Room: Snake

Electrolysis of Actinides and Chlorides in Molten LiCl-KCl • Terry Johnson (*ANL*), Javier Figueroa (*ANL*), Steven J. Limmer (*ANL*), James Willit (*ANL*)

Recovery of Actinide by Electrochemical Methods in Molten Chlorides using Solid Aluminum Cathodes • Rikard Malmbeck (*EC/JRC/ITU*), Laurent Cassayre (*Laboratoire de Genie Chimique*), Eric Mendes (*EC/JRC/ITU*), Jerome Serp (*EC/JRC/ITU*), Pavel Soucek (*EC/JRC/ITU*), Jean-Paul Glatz (*EC/JRC/ITU*)

Anodic Polarization Studies of Uranium in LiCl-KCl Melt • Steven J. Limmer (*ANL*), James Willit (*ANL*)

Identification of Statistical Invariance for Anodic Signals of Mk-IV Electrefiner • Supathorn Phongikaroon (*INL*), Tae-Sic Yoo (*INL*)

Electrolysis of uranium nitride containing fission product elements (Mo, Pd, Nd) in a molten LiCl-KCl eutectic • Takumi Satoh (*JAEA*), Takashi Iwai (*JAEA*), YaSUO Arai (*JAEA*)

Study of reaction of curium oxy-compound formation in molten chlorides • Alexander Osipenko (*RIAR*)

Simplified Reference Electrode for Electrorefining of Spent Nuclear Fuel in High Temperature Molten Salt • Kim Davies (*INL*), Shelly X. Li (*INL*)

Granulometric characteristics of plutonium dioxide obtained in molten chlorides • Alexander Osipenko (*RIAR*)

Advanced Reprocessing Session 2.1a

Session Title: New Extractants and Diluents

Room: Payette

Joint recovery of f-elements using solvent based on carbamoylphosphine oxide heading toward ORGA-process • Masaki Ozawa (*JAEA*), Vasily Babain (*KRI*), Andrew Shadrin

(KRI), S. Strelkov (KRI), Rimma Kiseleva (KRI), Andrew MURZIN (KRI)

Diamide derivatives of dipicolinic acid as actinide and lanthanide extractants in a variation of the UNEX process • Dean R. Peterman, (INL), R. Scott Herbst (INL), Jack Law (INL), Richard Tillotson (INL), Troy Garn (INL), Terry Todd (INL), Valeriy N Romanovskiy (KRI), Vasily Babain (KRI), M. Yu. Alyapshev (KRI), Igor V. Smirnov (KRI)

Demonstration of a TODGA/TBP Process for recovery of trivalent actinides and lanthanides from a PUREX Raffinate • Giuseppe Modolo (*Forschungszentrum Jülich GmbH*)

Chemical separation of actinides from high level radioactive liquid waste using diglycolamide (DGA) compounds • Yoshihiro Kitatsuki (JAEA), Yumi Sugo (JAEA), Toshihide Asakura (JAEA), Takaumi Kimura (JAEA)

Development of Alternate Extractant Systems for Fast Reactor Fuel Cycle • P.R. Vasudeva Rao (IGCAR), Thandangorai Ganapathi Srinivasan (IGCAR), Baldev Raj (IGCAR)

THE APPLICATION OF N,N-DIMETHYL-3-OXA-GLUTARAMIC ACID (DOGA) IN THE PUREX PROCESS • Jianchen Wang (*Tsinghua Univ.*), Jing Chen (*Tsinghua Univ.*)

Study on Selective Separation of Uranium(VI) by New N,N-dialkylamides • Shinichi Suzuki (JAEA)

Fluorinated Diluents – New Possibilities For Radiochemical Technology • Vasily Babain (KRI)

International Cooperation on Nuclear Energy Session 12.1

Session Title: International Cooperation on Nuclear Energy

Room: Summit

Advanced Fuel Cycle activities in IAEA • Hosadu Nawada (IAEA), Chaitanyamoy Ganguly (INEA)

The IAEA CRP on 'Studies of Advanced Reactor Technology Options for Effective Incineration of Radioactive Waste • Werner Maschek (FZK), Alexander Stanculescu (IAEA)

Progress and Interim Results of the INPRO Joint Study on Assessment of INS Based on Closed Nuclear Fuel Cycle with Fast Reactors • Vladimir Usanov (IAEA), Baldev Raj (IGCAR), Alfredo Vasile (CEA),

Nuclide economy • Evgeny Anatolievich Ivanov (Kurchatov Institute), Stanislav Anatolievich Subbotin (Kurchatov Institute)

Status of IAEA Coordinated Research Project on Study of process-losses in separation processes in partitioning and transmutation systems in view of minimizing long term environmental impacts • Joonhong Ahn (*Univ. of California, Berkeley*), K. C. Bimova (NRI), Alexandre Bychkov (RIAR), Tadashi Inoue (CRIEPI), Lothar Koch (ITU), Mikhail Kormilitsyn (RIAR), K. Nagarajan (IGCAR), Hosadu Nawada (IAEA), Yuxing Ye (CIAE), Jae-Hyung Yoo (KAERI)

RIAR Capabilities in Support of Research and Development of Generation IV Innovative Reactors • Alexander Bychkov (RIAR)

Advanced, Integrated Fuel Cycle concepts Session 1.3

Session Title: Reactor aspects of integrated fuel cycle

Room: Kestrels

Plutonium Utilization in Future UK PWRs Using MOX and Inert Matrix Fuels • Andrew Worrall (Nexia), Mike Thomas (Nexia)

Fuel Cycle Assessments of Reactor Based Pu Management in the UK • Andrew Worrall (Nexia), Kevin W. Hesketh (Nexia),

Actinide Burning in CANDU Reactors • Bronwyn Hyland (AEC), Gary R. Dyck (AEC)

Multi-recycling Minor Actinides in a Gas-cooled Fast Reactor • Wilfred Van Rooijen (Delft Univ. of Technology), Godart Van Gendt (Delft Univ. of Technology), David Van der Stok (Delft Univ. of Technology), Jan Leen Kloosterman (Delft Univ. of Technology)

Thermal- and Fast-Spectrum Molten Salt Reactors for Actinide Burning and Fuel Production • Charles Forsberg (ORNL)

Opportunities to Reduce Consumption of Natural Uranium in Reactor SVBR-75/100 • Georgy Il'ich Toshinsky (IPPE), Oleg G. Komlev (IPPE), Nataliya N. Novikiva (IPPE), Kirill G. Mel'nikov (IPPE)

Advantages of Co-located Spent Fuel Repository and Underground Reactor Facilities • Jay F. Kunze (ISU), James M. Maher (ISU), Carl W. Meyers (LANL)

Comparison of removed fuel compositions of CANDLE, PWR and FBR • Akito Nagata (Tokyo Institute of Technology), Hiroshi Sekimoto (Tokyo Institute of Technology)

Advanced Reactors Session 7.2

Session Title: Sodium Cooled Reactors II: Reactor Technology

Room: Merlins

Selection of the Reference steam generator • Eric P Loewen (GE), Chuck Boardman (GE Retired)

Investigation of Sodium: Carbon Dioxide interaction. Potential consequences on reactor operation • Latge Christian Henri (CEA), Simon Nicole (CEA)

Reviews and innovative technologies on Fuel Handling System for Sodium Fast Reactors • Gilles Rodriguez (CEA), Manual Saez (CEA), Mickael Levy (Ecole Polytechnique), Jean-Claude Astegiana (CEA), Pierre Le Coz (CEA), Alain Ravenet (CEA)

Rebirth of a Control Rod at the Phoenix Power Plant • Corinne De Carbalho (CEA), Bernard Vignau (CEA), Marc Masson (CEA)

Instrumentation, monitoring and NDE for new fast reactors • Leonard Bond (PNNL), Steven Doctor (PNNL), Kyle Bunch (PNNL), Morris Good (PNNL), Alan E. Waltar (PNNL)

An Effective Loading Method of Americium Targets in Fast Reactors • Shigeo Ohki (JAEA), Isamu Sato (JAEA), Tomoyasu Mizuno (JAEA), Hideyuki Hayashi (JAEA), Kenya Tanaka (JAEA)

Thermal criteria to compare Fast Reactors coolants for the intermediate loop • Manuel Saez (CEA), Gilles Rodriguez (CEA)

Supercritical Carbon Dioxide Brayton Cycle Energy Conversion for Sodium-Cooled Fast Reactors/Advanced Burner Reactors • James J. Sienicki (*ANL*), Anton Moisseytsev (*ANL*), Dae H. Cho, (*ANL*), Yoichi Momozaki (*ANL*), Dennis J. Kilsdonk (*ANL*), R. Haglund (*ANL*), Claude B. Reed (*ANL*), M.T. Farmer (*ANL*)

Experimental measurements of the decay power in the PHENIX fast reactor • Patrick CHAUCHEPRAT (*CEA*), Jean-Paul GROUILLER (*CEA*)

Developments in Nuclear Nonproliferation Technology, Policy and Implementation Session 10.4

Session Title: International Programs and Frameworks

Room: Peregrines

Supporting the Global Threat Reduction Initiative through Nuclear Material Recovery • Andrew Bieniawski (*NNSA*), Ian Hunter (*AREVA*), David Ohayon (*AREVA*), Thibault Louvet (*AREVA*)

The Global Initiatives for Proliferation Prevention Program in Partnership with the Global Nuclear Energy Policy (GNEP) Program • Trudy K. Overlin (*INL*), Margot Mininni (*DOE*), James Nobel (*DOE*)

Various Approaches for Establishing New Frameworks for the Peaceful Use of Nuclear Energy and Nuclear Nonproliferation • Naoki Kobayashi (*JAEA*), Makiko Tazaki (*JAEA*), Yosuke Naoi (*JAEA*), Masao Enzaki (*JAEA*)

The Global Nuclear Energy Partnership and the Spent Fuel Take-Back Issue • James C. Bresee (*DOE*)

Recent Advances in the Development of LEU Fuels for Research Reactor Applications • Dennis D. Keiser Jr. (*INL*), Daniel M. Wachs (*INL*)

Communicating Nuclear Issues with the Public • James Mal McKibben (*CNTA*)

THURSDAY, SEPTEMBER 13 – 8:00 A.M.

Advanced Fuels and Materials Session 4.5

Session Title: Fuel Performance Analysis II

Room: Willows

METAPHIX-1 Non Destructive PIE in the Irradiated Elements Cell of PHENIX • Laurent Brenton (*CEA*), Emmanuel Garces (*CEA*), Sébastien Desjardins (*CEA*), Bruno Fontaine (*CEA*), Brigitte Lacroix (*CEA*), Thierry Martella (*CEA*), Laurent Loubet (*CEA*), Hirokazu Ohta (*CRIEPI*), Takeshi Yokoo (*CRIEPI*), Michel Ougier (*ITU*), Jean Paul Glatz (*ITU*)

Irradiation of Metallic and Oxide Fuels for Actinide Transmutation in the ATR • Heather MacLean (*INL*), Steven Hayes (*INL*)

Irradiation Experiment of Fast Reactor Metal Fuels Containing Minor Actinides to 7at% Burnup • Hirokazu Ohta (*CRIEPI*), Takeshi Yokoo (*CRIEPI*), Tadashi Inoue (*CRIEPI*), Michel Ougier (*ITU*), Jean-Paul Glatz (*ITU*), Bruno Fontaine (*CEA*), Laurent Brenton (*CEA*)

The FUTURIX-FTA Experiment in PHENIX. Status of the oxide fuels and pins fabrication • Louis Donnet (*CEA*), Frederic Jorion (*CEA*), Caroline Leorier (*CEA*), Nicolas Drin (*CEA*), Demonstration experiment on irradiation of vibropac MOX fuel assemblies in the BN-600 reactor • Vladislav Kisly (*RJAR*)

Short Term Irradiation Test of Fuel Containing Minor Actinides Using the Experimental Fast Reactor Joyo • Takashi Sekine (*JAEA*), Tomonori Soga (*JAEA*), David W. Wootan (*JAEA*), Shinichi Koyama (*JAEA*), Takafumi Aoyama (*JAEA*)

A Micro-Gamma Scanning Device. The Determination of Fission product Concentration along the Diameter of a Fuel Pin • Mark W. Huntley (*INL*), Bruce A. Hilton (*INL*)

Micro-Gamma Scan Analyses of AFCI Actinide-bearing Transmutation Fuels • Bruce A. Hilton (*INL*), Mark Huntley (*INL*)

Advanced Fuels and Materials Session 4.6

Session Title: Fuel Properties

Room: Ponderosa

The Effect of Sample Size on Laser Flash Diffusivity Measurements • Andrew P. Maddison (*INL*)

Mechanical Properties-Microstructure-Processing Relationships of Monolithic Fuel Forms • Douglas E. Burkes (*INL*), Dennis D. Keiser Jr. (*INL*), Michael D. Chapple (*INL*), Francine J. Rice (*ISU*)

Metallic Transuranic Bearing Fuel Thermal Properties Measurement • Randall S. Fielding (*INL*), Douglas Burkes (*INL*), J. Rory Kennedy (*INL*)

Microstructural Characterization of Cast Metallic Transmutation Fuels • James Cole (*INL*), Dennis D. Keiser, Jr. (*INL*), Rory Kennedy (*INL*)

Microstructure Damage of Thin Aluminum Films by Cf-252 Irradiation • Supriyadi Sadi (*Oregon State Univ.*), Alena Paulenova (*Oregon State Univ.*), Walter Loveland (*Oregon State Univ.*), Philip Watson (*Oregon State Univ.*)

Study of electrochemical behavior of uranium and plutonium compounds in polymolybdate melts • Alexander Osipenko (*RJAR*)

Precursors for the Immobilization of Radioactive Cesium and Strontium from Spent Nuclear Fuel • Luis Ortega (*Texas A&M Univ.*), Sean McDeavitt (*Texas A&M Univ.*)

Advanced Waste Management Technology Session 5.5

Session Title: Molten Salt Based Waste Treatment and Waste Form Development

Room: Douglas

Strategic Minimization of High Level Waste from Pyroprocessing of Spent Nuclear Fuel • Michael F. Simpson (*INL*), Robert Benedict (*INL*)

Conditioning matrices from high level waste resulting from pyrochemical processing • Anges Grandjean (*CEA*), Thierry

Advocat (*CEA*), Chrisophe Jegou (*CEA*)

Immobilization of Technetium in a Metallic Waste Form • Steven M. Frank (*INL*), Dennis D. Keiser (*INL*), Ken C. Marsden (*INL*)

Disposition of Salt Waste from Pyrochemical Nuclear Fuel Processing • Eric Vance (*ANSTO*)

Co-Oxidation of Some Rare-Earth Chlorides in a Chloride Melts • Youg-jun Cho (*KAERI*), Hee-chul Yang (*KAERI*), Hee-Chul Eun (*KAERI*), Eung-Ho Kim (*KAERI*), Hwan-Seo Park (*KAERI*), In Tae Kim (*KAERI*)

High Waste Loading Glass-Ceramics Processed Via Hot Isostatic Press for Significant Volume Reduction of the Idaho High-Level Waste Calcines • Arthur Day (*ANSTO*), Bruce Begg (*ANSTO*), Sam Moricca (*ANSTO*), Marin Stewart (*ANSTO*)

Melting of Uranium Metal Powders with Residual Salts • Jin-Mok Hur (*KAERI*), In-Kyu Choi (*KAERI*), Dae-Sung Kang (*KAERI*), Chung-Seok Seo (*KAERI*)

Dechlorination and Stabilization of Radioactive Chloride Salt Waste in a Molten State • In-Tae Kim (*KAERI*), Hwan-Seo Park (*KAERI*), Hwan-Young Kim (*KAERI*), Seongwon Park (*KAERI*), Eng-Ho Kim (*KAERI*)

Novel Concepts for Waste Disposal and Repository Development Session 6.4

Session Title: Performance Assessment and Data Parameters

Room: Cottonwoods

Environmental Impact and Waste Repository Parameters • Daisuke Kawasaki (*Univ. of Tokyo*), Shinya Nagasaki (*Univ. of Tokyo*)

Uncertainty Analysis by Multiple Canister Repository Model • Keiichi Tsujimoto (*Mitsubishi*), Hiroshi Okuda (*Univ. of Tokyo*), Joonhong Ahn (*Univ. of California, Berkeley*)

Development of Safety Assessment for Radioactive Waste Disposal • Tomofumi Shimizu (*JNFL*), Yoshihiro Miyauchi (*JNFL*), Noriyuki Sasaki (*JNFL*)

Comparison of Environmental Impacts for PWR-UO₂, PWR-MOX and FBR • Erwan L Bouvier (*Univ. of California, Berkeley*), Joonhong Ahn (*Univ. of California, Berkeley*)

Modeling the Degradation of a Metallic Waste Form Intended for Geologic Disposal • Theodore H. Bauer (*ANL*), Edgar E. Morris (*ANL*)

Critical Safe Disposal of Spent Fuel: Behavior of Neutron Poisons • Bernhard Kienzler (*FZK*), Bernhard Gmal (*GRS*)

Advanced Reprocessing Session 2.6

Session Title: Head End Processing

Room: Salmon

Development of Uranium Crystallization System in 'NEXT' Reprocessing Process • Kazunori Nomura (*JAEA*), Tadahiro Washiya (*JAEA*), Toshihisa Tayama (*JAEA*), Jun Komaki (*JAEA*),

Takahiro Chikazawa (*Mitsubishi*), Toshiaki Kikuchi (*Mitsubishi*)

Development of Advanced Head-End Systems in the "NEXT" Process • Tadahiro Washiya (*JAEA*), Jun Lomaki (*JAEA*), Hideki Funasaka (*JAEA*), Hidetoshi Sugiyama (*JAEA*) Fluorination Behavior of UO₂F₂ in The Presence of F₂ and O₂ • Minoru Matsuda (*Tohoku Univ.*), Nobuaki Sata (*Tohoku Univ.*), Akira Kirishima (*Tohoku Univ.*), Osamu Tochiyana (*Tohoku Univ.*)

Development of FLUOREX Process as a Progressive LWR Reprocessing System • Akira Sasahira (*Hitachi*), Yuko Kani (*Hitachi*), Fumio Kawamura (*Hitachi*), Kuniyoshi Hoshino (*Hitachi*), Kenji Lino (*Hitachi*)

Development of Nitrogen Oxide Closed System in the Future Reprocessing Process • Yoshinobu Takaoku (*JNFL*), Isao Hattori (*JNFL*), Tetsuya Watanabe (*JNFL*), Noriyasu Moriya (*JNFL*), Yukio Sumida (*JNFL*), Sadao Araya (*JNFL*), Shunji Homma (*Saitama Univ.*), Yasuhiro Suzuki (*JGC*), Yoshie AKAI (*Toshiba*)

Simplified PUREX – promising technology of SNF treatment for the plant of the next generation • Yury Fedorov (*KRI*), V. Bondin (*MCC*), P. Gavrilov (*MCC*), Yu Revenko (*MCC*), E. Kudryavts (*Rosatom*), A. Khaperskaya (*Rosatom*), V. Romanovskiy (*Khlopin*), B. Zilberman (*Khlopin*), A. Shadrin (*Khlopin*),

Development of Fluoride Reprocessing Technologies Devoted to Molten-Salt Reactor Systems • Jan Uhrlir (*NRI*)

Sulfurization Behavior of Cerium Doped Uranium Oxides by CS₂ Nobuaki Sato (*Tohoku Univ.*), Shintaro Kato (*Tohoku Univ.*), Akira Kirishima (*Tohoku Univ.*), Osamu Tochiyam (*Tohoku Univ.*), Soichi Sato (*JAEA*)

Advanced Reprocessing Session 2.1b

Session Title: Unique Extractions and Processes

Room: Payette

Development of the ERIX Process for Reprocessing Spent FBR-MOX Fuel • Yuezhou Wei (*IRI*), Harutaka Hoshi (*IRI*), Mikio Kumagai (*IRI*)

Co-extraction of Americium (VI) and the Major Actinides with Tributyl Phosphate • Bruce Mincher (*INL*), Leigh Martin (*INL*), Nicholas Schmitt (*INL*)

Development of Advanced Reprocessing System Based on Use of Pyrrolidone Derivatives as Novel Precipitants with High Selectivity and Control Ability (1) - Concept of Advanced Reprocessing System and Basic Precipitation Experiments • Yasuhisa Ikeda (*Tokyo Institute of Technology*), Koichiro Takao (*Tokyo Institute of Technology*), Masayuki Harada (*Tokyo Institute of Technology*), Yasuji Morita (*JAEA*), Nasanobu Nogami (*Tokyo Institute of Technology*), Kenji Nishimura (*Mitsubishi*)

Development of an Advanced Reprocessing System Based on Use of Pyrrolidone Derivatives as Novel Precipitants with High Selectivity and Control Ability - Precipitation Behavior of Plutonium • Yasuji Morita (*JAEA*), Seong-Yun Kim (*JAEA*), Yasuhisa Ikeda (*Tokyo Institute of Technology*), Nasanobu Nogami (*Tokyo Institute of Technology*), Kenji Nishimura

(Mitsubishi)

Equilibrium of Zirconium and Molybdenum in Selected Extraction Systems • Alena Paulenova (*Oregon State Univ.*)

Peter Tkac (*Oregon State Univ.*)

Extraction of Uranium from Spent Fuels Using Liquefied Gases • Kayo Sawada (Nagoya Univ.), Daisuke Hirabayashi (Nagoya Univ.), Youichi Enokida (Nagoya Univ.)

Conversion of Actinide and RE Oxides into Nitrates and Their Recovery into Fluids • Vladimir Bondin (*MCC*), Sergey Bichkov (*MCC*), Igor Efremov (*MCC*), Yury Revenko (*MCC*), Vasily Babain (*KRI*), Andrey Murzin (*KRI*), Valeriy N. Romanov (*KRI*), Andrew Shadrin (*KRI*), Yuriy Fedorov (*KRI*), Nadezhda Raykova (*KRI*)

Safety Research of Multi-functional Reprocessing Process Considering Non-proliferation Based on Ion-exchange Method • Shin-ichi Koyama (*JAEA*), Masaki Ozawa (*JAEA*), Ken Okada (*NIAIST*), Kiyoko Kurosawa (*Kaken*), Tatsuya Suzuki (*Tokyo Institute of Technology*), Yasuhiko Fujii (*Tokyo Institute of Technology*)

Sustainability and Expanded Global Utilization of Nuclear Energy Session 11.2**Session Title: Sustainability and Utilization of Nuclear Technology****Room: Summit**

Application with COSI code of GEN IV Fast Reactors introduction in the French park • Jean-Paul Grouiller (*CEA*), Lionel Boucher (*CEA*), Maryan Meyer (*CEA*)

Resource Depletion: A Comparative Analysis of Uranium and Other Minerals • Erich Schneider (*Univ. of Texas, Austin*), William Sailor (*LANL*)

Depleted and Recyclable Uranium: Inventories and Options for GNEP • Erich Schneider (*Univ. of Texas, Austin*), Mark Deinert (*Cornell Univ.*), Anthony Scopatz (*Univ. of Texas, Austin*)

Thorium Fuel Cycle: A Technical Overview and Practical Approach to Deployment • Hajimu Yamana (Kyoto University)

Potential Applications for Nuclear Energy • Finis H. Southworth (*AREVA NP*), Jean-Claude Gauthier (*AREVA SAS*), Michel A. Lecomte (*AREVA SAS*), Frank Carre (*CEA*)

Business Opportunities for Small Reactors • Akio Minato (*CREIPI*), Satoshi Nishimura (*CREIPI*)

Base-Load and Peak Electricity from a Combined Nuclear Heat and Fossil Combined-Cycle Power Plant • James Conklin (*ORNL*), Charles W. Forsberg (*ORNL*)

The NuGas Concept - Combining a Nuclear Power Plant with a Gas-fired Plant • Alistair Smith (*Parsons Brinckerhoff*), Paul Willson (*Parsons Brinckerhoff*)

Advanced, Integrated Fuel Cycle concepts Session 1.4**Session Title: Advanced Nuclear Fuel Cycle Concepts****Room: Kestrels**

Which Elements Should Be Recycled for a Comprehensive Fuel Cycle • Steven James Piet (*INL*), Trond Bjornard (*INL*), Brent Dixon (*INL*), Dirk Gombert II (*INL*), Bob Hill (*ANL*), Christopher Laws (*ISU*), Gretchen Matthern VI (*INL*), David E. Shropshire (*INL*), Roald Wigeland (*ANL*)

Benefits to Geologic Disposal from Limited Spent Fuel Processing • Frederic M. Bailly (*OSEO*), Richard Vinoche (*AREVA*)

Economic Analysis of the Next Generation Nuclear Fuel Cycle • Jacob Jacobson (*INL*), Gretchen Matthern VI (*INL*), David Shropshire (*INL*), Ann Marie Philips (*INL*), Steven James Piet (*INL*)

Global Evaluation of Nuclear Infrastructure Utilization Scenarios (GENIUS) • Mary Lou Dunzik-Gougar (*ISU*), Chris Juchau (*INL*), Kemal Pasamehmetoglu (*INL*), Paul P. H. Wilson (*Univ. of Wisconsin, Madison*), Paul J. Turnsky (*North Carolina State Univ.*), Hany S. Abdel-Khalik (*North Carolina State Univ.*), Tracy Stover (*North Carolina State Univ.*)

Assessments of Uncertainties in Advanced Equilibrium Fuel Cycles • Jeff Preston (*Univ. of Tennessee*), Brian Thomas (*SENES Oak Ridge*), Thomas Anderson (*Univ. of Tennessee*), Jason Hou (*Univ. of Tennessee*), Joe McConn (*Univ. of Tennessee*), Steve Frederiksen (*Univ. of Tennessee*), Laurence Miller (*Univ. of Tennessee*)

What can Recycling in Thermal Reactors Accomplish? • Steven James Piet (*INL*), Jacob Jacobson (*INL*), Abdellatif M. Yacout (*ANL*)

Potential of Using Variable Fast Reactor Conversion Ratio as a Control Knob for Managing the Fuel Cycle • Gretchen Matthern VI (*INL*), Steven James Piet (*INL*), Jacob Jacobson (*INL*), Abdellatif M. Yacout (*ANL*)

Study on Nuclear Fuel Cycle System using Coated-particle Fuel and Hybrid Microcapsule Separation Method • Toshio Wakabayashi (*Tohoku Univ.*), Hitoshi Mimura (*Tohoku Univ.*)

Nuclear Production of Hydrogen Session 9.2**Session Title: Nuclear Production of Hydrogen II****Room: Merlins**

Development of an SO₂-Depolarized Electrolyzer for the Hybrid Sulfur Thermochemical Hydrogen Production Process • William Summers (*SRNL*), John Steinke (*SRNL*), Timothy Steeper (*SRNL*), David Herman (*SRNL*)

NHI Technical Readiness Evaluation System • Steven R. Sherman (*INL*), Dane Wilson (*ORNL*), Steve Pawel (*ORNL*)

An Improved Hybrid Sulfur Process Flowsheet • Maximilian B. Gorensiek (*SNL*), William Summers (*SNL*)

Integrated laboratory scale demonstration experiment of S-I cycle • Jean Leybros (*CEA*), Jean Duhamet (*CEA*), Philippe Dehaudt (*CEA*), Michel Boidron (*CEA*)

Catalyst Needs for Thermochemical Hydrogen Production Cycles • Daniel M. Ginosar (*INL*), Lucia Petkovic (*INL*), Harry Rollins (*INL*), Kyle Burch (*INL*)

Recent Results in the Development of High Temperature Electrolysis for Hydrogen Production • J. Stephen Herring (*INL*), James E. O'Brien (*INL*), Carl Marcel Stoots (*INL*)

Developments in Nuclear Nonproliferation Technology, Policy and Implementation Session 10.3

Session Title: New Technologies in Detecting Proliferation

Room: Peregrines

Next-Generation Online MC&A Technologies for Reprocessing Plants • Eric Smith (*PNNL*), Jon M. Schwantes (*PNNL*), Matthew Douglas (*PNNL*), Jennifer Ressier (*PNNL*), Philip Durst (*PNNL*), Christopher Orton (*Oregon State Univ.*), N. Christensen (*Oregon State Univ.*)

Neutron List Mode Data for Advanced Safeguards • M.T. Swinhoe (*LANL*), J.B. Marlow (*LANL*), H.O. Menlove (*LANL*)

The Role of Nuclear Data in Advanced Safeguards • P.A. Santi (*LANL*), M. Todosow (*LANL*), T.S. Hill (*LANL*)

Tags to Track Illicit Uranium and Plutonium • Jonathan Haire (*ORNL*), Charles Forsberg (*ORNL*)

Intrinsic Proliferation Resistance of Different Spent Nuclear Fuels • Charles Forsberg (*ORNL*), David Moses (*ORNL*)

Neutrinos and non proliferation studies via the DOUBLE CHOOZ experiment • Lydie Giot (*Subatech*), Muriel Fallot (*Subatech*), Sandrine Corman (*Subatech*), Michel Cribier (*APC*), Thierry Lasserre (*APC*), Alain Letourneau (*CEA*), David Lhuillier (*CEA*), Benoit Guillon (*APC*)

Opportunities for neutrino monitor's implementation for guarantees of nonproliferation in GNEP • Evgeny Anatolievich Ivanov (*Institut de Physique Nucléaire d'Orsay*), Valery Sinev (*Kurchatov Institute*)

THURSDAY, SEPTEMBER 13 – 1:00 PM

Advanced Fuels and Materials Session 4.7

Session Title: Overviews of International Fuels Programs

Room: Willows

U.S. Plans for the Next Fast Reactor Actinide Transmutation Fuels Irradiation Test • Bruce A. Hilton (*NL*), William J. Carmack (*NL*), Stewart Voit (*LANL*), Steven Hayes (*NL*), Kemal Pasamehmetoglu (*NL*)

French R&D Program for Minor Actinide bearing fuel developments • Dominique M. Warin (*CEA*)

Historical Review of U.S. Transient Fast Reactor Fuel Testing • William J. Carmack (*NL*), Heather MacLean (*NL*), Douglas Crawford (*NL*)

The Materials Test Station: A Fast-Spectrum Irradiation Facility • Eric Pitcher (*LANL*)

Advanced Reactors Session 7.3

Session Title: Advanced Water Cooled Reactors II

Room: Ponderosa

Neutronic Study of Slightly Modified Water Reactors and Application to Transition Scenarios • Richard Chambon (*Centre National de la Recherche Scientifique*)

Advanced LWR Concept of FLWR for TRU Recycling • Takamichi Iwamura (*JAEA*), Tsutomu Okubo (*JAEA*), Sadao Uchikawa (*JAEA*)

Analysis of High Conversion Water Reactors • Hervé Golffier (*CEA*), Véronique Bellanger (*CEA*), André Bergeron (*CEA*), Jean-Michel Do (*CEA*), Siegfried Douce (*CEA*), Bernard Gastaldi (*CEA*), Gérard Mignot (*CEA*), Caroline Thevenot (*CEA*)

BWRs for Long-term Energy Supply and for Fissioning Almost All Transuranium • Renzo Takeda (*Hitachi*), Junichi Miwa (*Hitachi*), Kumiaki Moriya (*Hitachi*)

Feasibility of Water Cooled Thorium Breeder Reactor Based on LWR Technology • Naoyuki Takaki (*Tokyo Institute of Technology*), Sidik Permana (*Tokyo Institute of Technology*), Hiroshi Sekimoto (*Tokyo Institute of Technology*)

Advanced Reactors Session 7.4

Session Title: Lead-Cooled Reactor Systems

Room: Douglas

Viability of a LBE Cooled Transmutation Reactor – PEACER-300 • Jae-Yong Lim (*Kyung Hee Univ.*), Myung Hyun Kim (*Kyung Hee Univ.*), Hyung-Won Lee (*Seoul National Univ.*), Ilsoon Hwang (*Seoul National Univ.*)

Prediction of Peacer-300 Natural Circulation Capability • Hyong-Won Lee (*NTERCK*), Jun Lim (*NTERCK*), Seung Ho Jeong (Nuc Mat. Lab), Han-Gyu Joo (*Seoul National Univ.*), Il Soon Hwang (*Seoul National Univ.*)

A Concept of the Innovative Nuclear Technology Based on Standardized Fast Reactors SVBR-75/100 • Anatoly V. Zrodnikov (*IPPE*), Georgy Il'ich Toshinsky (*IPPE*), Oleg G. Komlev (*IPPE*), Yury G. Dragunov (*FSUE*), Vladimir S. Stepanov (*FSUE*), Nikolay N. Klimov (*FSUE*)

Principles of Providing Inherent Self-Protection and Passive Safety Characteristics • Georgy Il'ich Toshinsky (*IPPE*), Oleg G. Komlev (*IPPE*), Ivan V. Tormyshev (*IPPE*), Vladimir S. Stepanov (*FSUE*), Nikolay N. Klimov (*FSUE*), Sergey N. Bolvanchikov (*FSUE*)

Neutronic and Severe Safety Aspects of 600 MWe Lead and Sodium Cooled Fast Reactors • Kamil Tucek (*Joint Research Centre of the EC*), Johan Carlsson (*Joint Research Centre of the EC*), Dragan Vidovic (*Joint Research Centre of the EC*), Hartmut Wider (*Joint Research Centre of the EC*)

Optimization of Fast Breeder Reactors Employing Innovative Liquid Metal Coolants • Stevan Pilarski (*EDF*)

Developments in Nuclear Nonproliferation Technology, Policy and Implementation Session 10.2**Session Title: Nuclear Nonproliferation Systems and Facility Modeling****Room: Cottonwoods**

Systems Modeling for Deployment Strategies for GNEP • K. Kern (*LANL*), M. Crozat (*LANL*), B. Dixon (*LANL*)

Simulation Enabled Safeguards Assessment Methodology • Robert Bean (*INL*), Trond Bjornard (*INL*), Joseph Lemmon (*INL*)

Safeguards Optimization Tool for the Advanced Fuel Cycle Facility • S. Demuth (*LANL*), K.E. Thomas (*LANL*), E.T. Dixon (*LANL*)

Testing and Assessment of Model Inputs for Proliferation Risk Assessment Tools • David Saltiel (*SNL*), Virginia D. Cleary (*SNL*), Paul Rexroth (*SNL*), Gary E. Rochau (*SNL*)

Proliferation Resistance of Advanced Nuclear Fuel Cycles • Lara Pierpoint (*MIT*), Mujid S. Kazimi (*MIT*), Pavel Hejzlar (*MIT*), Youssef A. Shatilla (*MIT*), Nicephore Bonnett (*MIT*)

Model-based calculations of the probability of a country's nuclear proliferation decisions • Li Jun (*North Carolina State Univ.*), Man-Sung Yim (*North Carolina State Univ.*), David Nicholas (*Univ. of North Carolina, Chapel Hill*)

Advanced Waste Management Technology Session 5.3**Session Title: Development of Separation & Monitoring Strategies for Aqueous Reprocessing****Room: Salmon**

On-line physical property process measurements for nuclear fuel recycling • Leonard Bond (*PNNL*), Richard Pappas (*PNNL*), Margaret Greenwood (*PNNL*), Gregg Lumetta (*PNNL*)

Multi-component analysis of mixed rare-earth metal ion solutions by the electronic tongue • Andrey Legin (*St. Petersburg Univ.*), Vasily Babain (*KRI*), Dmitry Kirsanov (*St. Petersburg Univ.*), Alisa Rudnitskaya (*St. Petersburg Univ.*), Sergei Rovny (*PA Mayak*), Mihail Lonunov (*PA Mayak*)

Cosmic rays to acoustics: Non-invasive monitoring for nuclear applications • Steven John Stanley (*Nexia*), Paul Scully (*Nexia*)

A Pilot Test of Partitioning for the Simulated Highly Saline High Level Waste • Jing Chen (*Tsinghua Univ.*)

Palladium extraction from nitric acid solutions by dipicolinic acid diamides • Mikhail Alyapshev (*KRI*), Vasily A. Babain (*KRI*), Yury Polhitonov (*KRI*), Vyacheslav M. Esimantovskiy (*KRI*)

The HLW processing using Zirconium Salt of Dibutyl Phosphoric • Yury Fedrow (*KRI*), B. Zberman (*KRI*), O. Shmidt, (*KRI*), G. Choppin (*Florida State Univ.*), Sh. Vidgayan (*Chalk River Labs*)

Session Title: Partitioning Process Development**Room: Snake**

Electrochemical Study on the Electrodeposition of U, Nd, Ce, La and Y on a Liquid Cadmium Cathode in LiCl-KCl Eutectic Salt • Sung Bin Park (*KAERI*), Jong Hyeon Lee (*KAERI*), Sung Chan Hwang (*KAERI*), Young Ho Kang (*KAERI*), Joon Bo Shim (*KAERI*), Han Soo Lee (*KAERI*), Eung-Ho Kim (*KAERI*), Seong Won Park (*KAERI*)

Conceptual Design of a High Throughput Electrorefining of a Uranium by Using Graphite Cathode • JongHyeon Lee (*KAERI*), Young Ho Kang (*KAERI*), Sung Chan Hwang (*KAERI*), Sung Bin Park (*KAERI*), Joon Bo Shim (*KAERI*), Han Soo Lee (*KAERI*), Eung-Ho Kim (*KAERI*), Seong Won Park (*KAERI*)

Purification of plutonium dioxide from americium • Alexander Osipenko (*RIAR*)

A Numerical Assessment of Pyrochemical Process Performance and Calculation of Removal Factor • Judong Bae (*NUTRECK*), Kyung Woo Yi (*Seoul National Univ.*), Ilsoon Hwang (*Seoul National Univ.*)

Development of an ACP Facility • Gil-Sung You (*KAERI*), Won-Myung Choung (*KAERI*), Jeong-Hoe Ku (*KAERI*), Il-Je Cho (*KAERI*), Dong-Hak Kook (*KAERI*), Kie-Chan Kwon (*KAERI*), Eun-Pyo Lee (*KAERI*), Ji-Sup Yoon (*KAERI*), Seong-Won Park (*KAERI*), Won-Kyung Lee (*KAERI*)

Advanced Reprocessing Session 2.7**Session Title: Optimizing Solution Chemistry – Radiolysis, Polymerization and Hydrolysis****Room: Payette**

DIAMEX-SANEX solvent behaviour under continuous degradation and regeneration operation • Béatrice Cames (*CEA*), Isabelle Bisel (*CEA*)

Hydrolysis of Acetohydroxamic Acid Under UREX + Conditions • M. A. Cleveland (*Oregon State Univ.*), Alena Paulenova (*Oregon State Univ.*), Jason E. Bruso (*Oregon State Univ.*), M. Alyapshev (*Oregon State Univ.*)

Prevention of Pu(IV) Polymerization in a PUREX-Based Process • Patricia Paviet-Hartmann (*ISU*), Gerald Senentz (*AREVA*)

New hydrolytically stable solvent for Am/Eu separation in acidic media • Igor V. Smirnov (*KRI*), Vasily A Babain (*KRI*), Aleksey V Chirkov (*KRI*)

Attempts to Improve Radiolytic Stability of Amidic Extractants • Yumi Sugo (*JAEA*), Yuji Sasaki (*JAEA*), Takaumi Kimura (*JAEA*)

THURSDAY, SEPTEMBER 13 – 3:45 P.M.**Plenary Session III - Closing****Session Title: Global 2007 – Closing Plenary****Room: Summit****Partitioning and Transmutation Session 8.5**